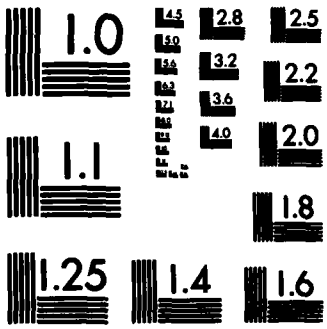
AD-A122 937 WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE XXXVII GENUS NOVO?(U) FOREST PRODUCTS LAB MADISON WI B F KUKACHKA OCT 82 FSRP-FPL-425 1/1

UNCLASSIFIED F/G 2/6 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

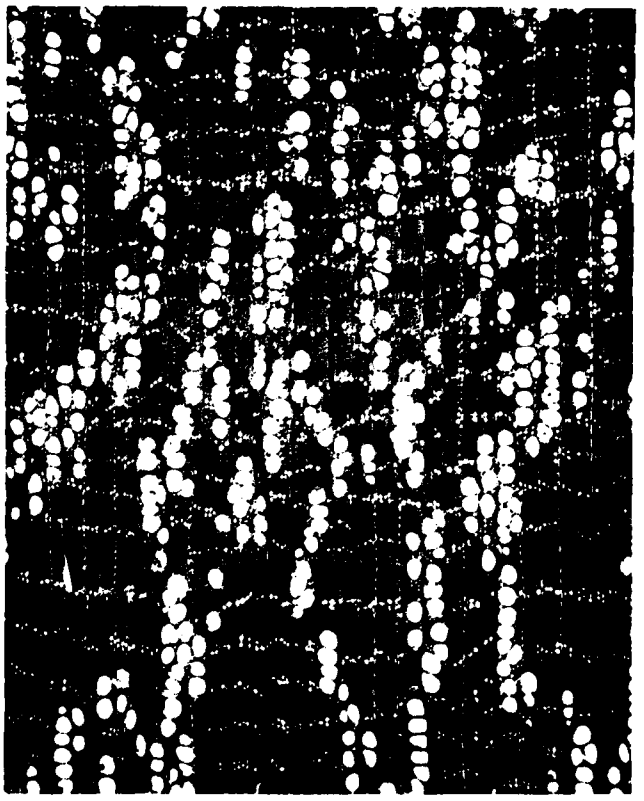
WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE

XXXVII. GENUS NOVO?

RESEARCH PAPER FPL 425

FOREST PRODUCTS LABORATORY
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
MADISON, WIS.

OCTOBER 1982



Abstract

This anatomical group or genus is represented by a number of specimens from Brazil bearing the names Syzygiopsis pachycarpa Pires, S. oblanceolata Pires, S. oppositifolia, and a number of unassigned specimens from Panama, Surinam, and Venezuela. On the basis of wood color and anatomy, the woods of this group are very different from the Syzygiopsis described earlier in this series and cannot be included in that genus because they exhibit little or no degree of alliance. The members of this group also are separable anatomically from both Bumelia (Group B) (FPL Res. Pap. 325 in this series) and Planchonella (Asiatic) and may well represent an undescribed genus. It appears quite probable that several species are represented here.

Preface

The Sapotaceae form an important part of the ecosystem in the neotropics; for example, limited inventories made in the Amazon Basin indicate that this family makes up about 25 percent of the standing timber volume there. This would represent an astronomical volume of timber but at present only a very small fraction is being utilized. Obviously, better information would help utilization--especially if that information can result in clear identification of species.

The Sapotaceae represent a well-marked and natural family but the homogeneous nature of their floral characters makes generic identification extremely difficult. This in turn is responsible for the extensive synonymy. Unfortunately, species continue to be named on the basis of flowering or fruiting material alone and this continues to add to the already confused state of affairs.

This paper on a Genus Novo? is the thirty-seventh in a series describing the anatomy of the secondary xylem of the neotropical Sapotaceae. The earlier papers, all by the same author and under the same general heading, include:

I. Bumelia--Res. Pap. FPL 325
II. Mastichodendron--Res. Pap. FPL 326
III. Dipholis--Res. Pap. FPL 327
IV. Achrouteria--Res. Pap. FPL 328
V. Calocarpum--Res. Pap. FPL 329
VI. Chloroluma--Res. Pap. FPL 330
VII. Chrysophyllum--Res. Pap. FPL 331
VIII. Diploon--Res. Pap. FPL 349
IX. Pseudoxythece--Res. Pap. FPL 350
X. Micropholis--Res. Pap. FPL 351
XI. Prieurella--Res. Pap. FPL 352
XII. Neoxythece--Res. Pap. FPL 353
XIII. Podoluma--Res. Pap. FPL 354
XIV. Elaeoluma--Res. Pap. FPL 358
XV. Sandwithiodoxa--Res. Pap. FPL 359
XVI. Paralabatia--Res. Pap. FPL 360
XVII. Gambeya--Res. Pap. FPL 361
XVIII. Gomphiluma--Res. Pap. FPL 362
XIX. Chromolucuma--Res. Pap. FPL 363
XX. Manilkara--Res. Pap. FPL 371
XXI. Barylucuma--Res. Pap. FPL 372
XXII. Pradosia--Res. Pap. FPL 373
XXIII. Gayella--Res. Pap. FPL 374
XXIV. Ecclinusa--Res. Pap. FPL 395
XXV. Ragala--Res. Pap. FPL 396
XXVI. Myrtiluma--Res. Pap. FPL 397
XXVII. Sarcaulis--Res. Pap. FPL 398
XXVIII. Labatia--Res. Pap. FPL 416
XXIX. Eglerodendron--Res. Pap. FPL 417
XXX. Pseudocladia--Res. Pap. FPL 418
XXXI. Pouteria--Res. Pap. FPL 419
XXII. Richardella--Res. Pap. FPL 420
XXXIII. Englerella--Res. Pap. FPL 421
XXXIV. Franchetella-Eremoluma--Res. Pap. FPL 422
XXXV. Urbanella--Res. Pap. FPL 423
XXXVI. Syzygiopsis--Res. Pap. FPL 424

Publication in this manner will afford interested anatomists and taxonomists the time to make known their opinions and all such information is hereby solicited. At the termination of this series the data will be assembled into a comprehensive unit.

WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE

XXXVII. GENUS NOVO?

By

B. F. Kukachka, Botanist[1/]

Forest Products Laboratory,[2/] Forest Service
U.S. Department of Agriculture

Introduction

This anatomical group or genus is represented by a number of specimens from Brazil bearing the names Syzygiopsis pachycarpa Pires, S. oblanceolata Pires, S. oppositifolia, and a number of unassigned specimens from Panama, Surinam, and Venezuela. On the basis of wood color and wood anatomy, the woods of this group are very different from the previously described Syzygiopsis and cannot be included in that genus because they exhibit little or no degree of alliance. Syzygiopsis pachycarpa was described by J. M. Pires of the Museu Goeldi (Belem, Brazil) but remains unpublished pending the determination of its proper generic affiliation. Pires suggests that its affiliation may be with the Asiatic genus Planchonella. This author has adopted pachycarpa as the anatomical type for this group of specimens that share certain characters with the Asiatic Planchonella as well as with the American species of Bumelia (Group B) that was described early in this series of papers (FPL Res. Pap. 325, 1978). The members of this group are separable anatomically from both Planchonella and Bumelia (Group B) and may well represent an undescribed genus. It appears quite probable that several species are reported here.

Limited quantities of this wood have been imported into the United States from Para, Brazil, in the form of turning squares for use in the furniture industry as an alternate to sugar maple (Acer saccharum L.).

Description

The description of this unassigned and unknown group is based on 27 specimens many of which have been previously assigned to the genus Syzygiopsis and a few

---

1/ Pioneer Research Unit, Forest Products Laboratory.

2/ Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

to Bumelia, Achrouteria, Pouteria bilocularis (Winkl.) Baehni and the remainder labeled simply as unknown.

General: Wood yellow-brown (straw-colored), hard and heavy with an average specific gravity of 0.92. Texture very fine, the largest pores attaining a diameter of 102 μm. Luster low. Bark attached to seven of the wood specimens ranged in thickness from 3 to 10 mm outer bark dark, inner bark yellowish-brown; finely laminated. Froth test negative.

Anatomical:

Pores in clustered-echelon arrangement (figs. 1,3,4); most commonly in radial multiples of 2-4 (8) pores; solitary pores also present. Maximum tangential pore diameter 102 μm with an overall average for all specimens examined of 86 μm (range of all specimens 63-102 μm).

Vessel member length averages 700 μm with the individual specimen averages ranging from 520 to 910 μm. Intervessel pitting 3-5 μm in diameter. Perforation plates simple. Tyloses, when present, thin-walled; infrequently with large crystals.

Axial parenchyma more or less regularly banded, sometimes wavy to discontinuous. Individual bands commonly 1-3 seriate, infrequently to in-part 4-seriate. Cells infrequently with brown contents. Microcrystals were not observed in the pachycarpa series but were observed in all the other specimens examined. A third group, represented by Sampaio 13, Servico Florestal 44, and TS (commercial specimen), contained microcrystals and large rhombic crystals in the tyloses.

Wood rays 1-3 (4) seriate; heterocellular (fig. 2). The maximum body height of the multiseriate portion averages 508 μm with a range of 331 to 789 μm for all specimens examined. Brown-colored contents few to lacking. Vessel-ray pitting irregular in shape and size but most frequently linear to obovoid. Silica lacking or at least not detectable with the microscope, although chemical analysis produced values of 0.04 percent in Oliveira 2439 and 0.03 percent in Servico Florestal 44; for practical purposes it is regarded as being absent from this group. Pitting on lateral walls of square and erect marginals fine and abundant.

Wood fiber thick-walled, averaging 1.53 mm in length; range of average length in different specimens from 1.37 to 1.93 mm. Vascular tracheids present but not always detectable in prepared slides.

Diagnostic features: Wood yellowish-brown (straw-colored), hard and heavy, texture very fine. Pores not exceeding 102 μm in tangential diameter and in radial-echelon arrangement. Intervessel pitting 3-5 μm in diameter. Silica lacking. Microcrystals present in axial parenchyma of all specimens (except pachycarpa). Rhombic crystals present in axial parenchyma and tyloses of Sampaio 13, Servico Florestal 44, and a commercial specimen from Venezuela.

Superficially and under a hand lens, the woods of this group could be mistaken for Achrouteria pomifera and members of Bumelia (Group B). Achrouteria pomifera is readily identifiable by the "huge" silica particles in the wood rays, and in the members of Bumelia (Group B) the parenchyma bands are wider and very distinct.

Table 1.--Selected measurements of specimens examined--Genus Novo?[1/]

Species	Collector and number	Sp. gr.	Si	MPD	VML	FL	IV	R	MBH	Source
			%	µm	µm	mm	µm		µm	
pachycarpa	Oliveira, E. 767	0.90	0.00	87	910	1.93	4-5	2	433	Brazil
	Rosa, N. A. 1277	0.90	0.00	71	800	1.47	4-5	2	394	Brazil
	Silva, N. T. 1162	0.90	0.00	102	730	1.44	4-5	3	591	Brazil
	Silva, N. T. 2999	0.85	0.00	102	710	1.50	4-5	3	512	Brazil
	Silva, N. T. 3925	0.90	0.00	87	630	1.40	4-5	3	433	Brazil
	Silva, N. T. 3931	0.90	0.00	102	760	1.49	4-5	3	630	Brazil
	Capucho 368	0.88	0.01	102	670	1.50	3-4	3	630	Brazil
	Capucho s.n.	0.91	0.00	102	730	1.62	3-4	4	710	Brazil
	Cordeiro 1476	0.90	0.00	79	730	1.38	3-4	3	789	Brazil
	Cordeiro 1516	1.00	0.02	79	790	1.68	3-4	3	670	Brazil
	Cordeiro 1519	0.90	0.01	79	660	1.50	3-4	3	394	Brazil
	Cordeiro 1541	0.98	0.00	95	720	1.51	3-4	3	670	Brazil
	Cordeiro 1553	0.91	0.01	79	660	1.55	3-4	4	449	Brazil
	De Bruyn 1723	0.96	0.00	102	840	1.76	3-4	2	410	Venezuela
	Ducharne 30	1.02	0.00	71	750	1.37	3-4	3	347	Brazil
	Froes 29449	0.90	0.00	87	610	1.65	4-5	3	339	Brazil
	IICA 135	0.90	0.01	102	610	1.38	3-4	3	394	Panama
	Lanjouw-Lindeman 2283	0.90	0.00	87	810	1.74	4-5	2	331	Surinam
	Merida 3242	0.95	0.00	79	590	1.43	3-4	3	552	Venezuela
	Oldenberger-Norde 474	0.92	0.00	63	730	1.48	4-5	3	355	Surinam
	Oliveira, E. 2439	0.85	0.04	95	630	1.39	3-4	3	575	Brazil
	Pittier 478	1.02	0.00	63	610	1.40	3-4	3	394	Venezuela
	TS 10	0.85	0.00	87	630	1.75	3-4	3	670	Brazil
	TS s.n.		0.00	71	520	1.36	3-4	4	512	Venezuela
	Sampaio 13	0.97	0.01	87	660	1.53	4	3	607	Brazil
	Servico Florestal 44	0.84	0.03	102	680	1.69	4	4	575	Brazil
	TS	0.98	0.01	63	780	1.49	4	3	355	Venezuela

1/ Sp. gr. = specific gravity; Si = silica content; MPD = maximum tangential pore diameter; VML = vessel member length; FL = fiber length; IV = intervessel pit diameter; R = maximum ray seriation; MBH = maximum body height of multiseriate portion of wood rays. Silica analysis by Martin F. Wesolowski, Chemist, FPL.

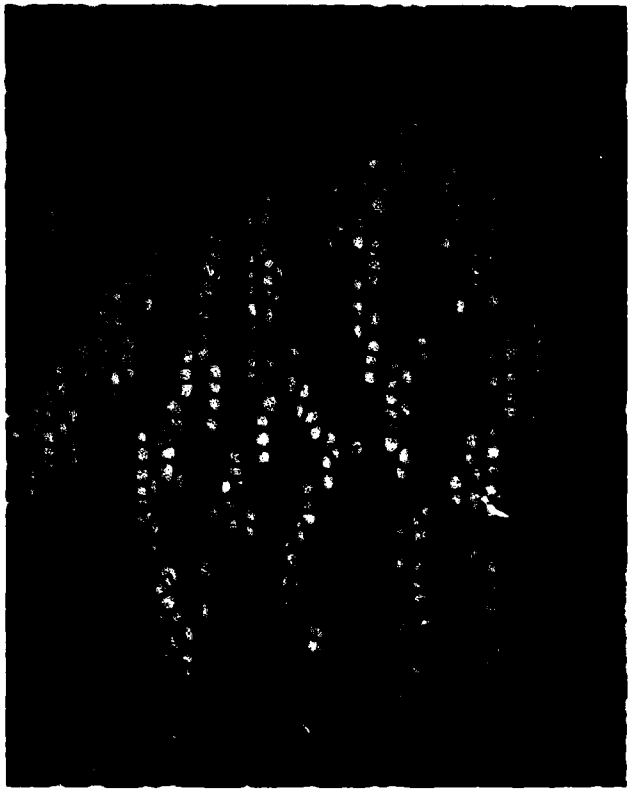


Figure 1.--Received as Syzygiopsis pachycarpa, cross section X 30 (E. Oliveira 767).

Figure 2.--Same as figure 1, tangential section X 110.

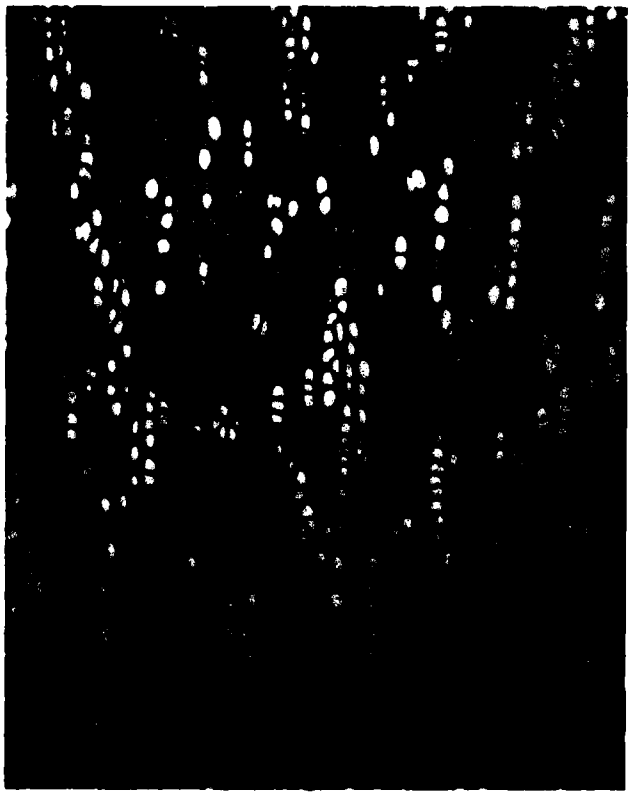


Figure 3.--Received as Syzygiopsis oppositifolia, cross section X 30 (Capucho 368).

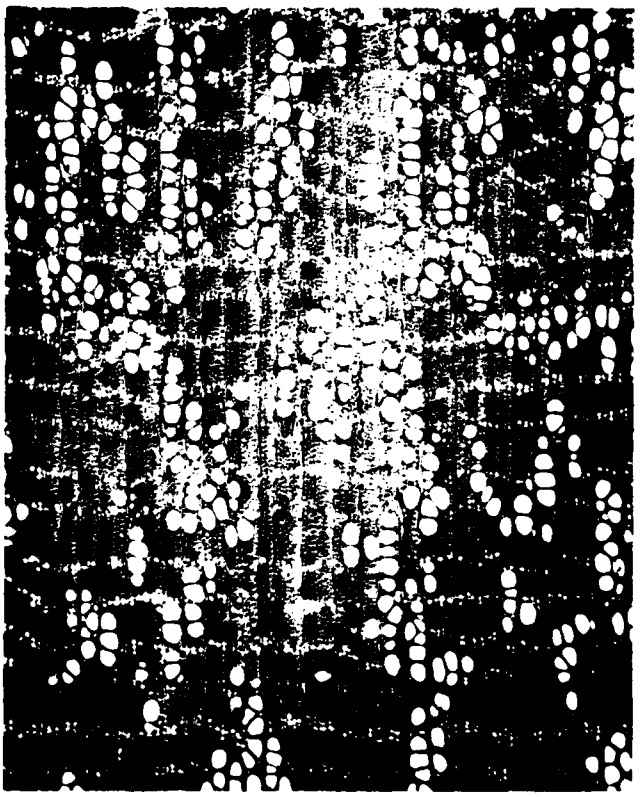


Figure 4.--Received as Sideroxylon iveri, cross section X 30 ("Perotinga", Servico Florestal, Espirito Santo).

☆ U.S. GOVERNMENT PRINTING OFFICE: 1982—654-280

U.S. Forest Products Laboratory
Wood anatomy of the neotropical Sapotaceae: XXXVII. Genus Novo?, by B. F. Kukachka, FPL.
5 p. (USDA For. Serv. Res. Pap. FPL 425).

This anatomical group or genus is represented by a number of specimens from Brazil bearing the names Syzygiopsis pachycarpa Pires, S. oblanceolata Pires, S. oppositifolia, and a number of unassigned specimens from Panama, Surinam, and Venezuela. On the basis of wood color and anatomy, the woods of this group are very different from the Syzygiopsis described earlier in this series and cannot be included in that genus because they exhibit little or no degree of alliance. The members of this group also are separable anatomically from both Bumelia (Group B) (FPL Res. Pap. 325 in this series) and Planchonella (Asiatic) and may well represent an undescribed genus. It appears quite probable that several species are represented here.

END

FILMED

2-83

DTIC